

July 2003

SOCIAL SECURITY REFORM

Analysis of a Trust Fund Exhaustion Scenario



G A O

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Highlights of [GAO-03-907](#), a report to congressional requesters

Why GAO Did This Study

Social Security is an important social insurance program affecting virtually every American family. It is the foundation of the nation's retirement income system and also provides millions of Americans with disability insurance and survivors' benefits. Over the long term, as the baby boom generation retires, Social Security's financing shortfall presents a major solvency and sustainability challenge.

The Chairman of the Senate Special Committee on Aging and the Chairman of the Senate Committee on Finance asked GAO to use its analytic framework to evaluate an illustrative "Trust Fund Exhaustion" scenario under which benefits are reduced proportionately for all beneficiaries by the shortfall in revenues occurring upon exhaustion of the combined Old-Age and Survivors Insurance and Disability Insurance Trust Funds. The analytic framework consists of three basic criteria: (1) the extent to which the proposal achieves sustainable solvency and how it would affect the U.S. economy and the federal budget; (2) the balance struck between the twin goals of income adequacy and individual equity; and (3) how readily changes could be implemented, administered, and explained to the public. The Trust Fund Exhaustion scenario is intended as an analytic tool, not a legal determination.

www.gao.gov/cgi-bin/getrpt?GAO-03-907.

To view the full product, including the scope and methodology, click on the link above. For more information, contact Barbara Bovbjerg at (202) 512-7215 or Susan Irving at (202) 512-9142.

SOCIAL SECURITY REFORM

Analysis of a Trust Fund Exhaustion Scenario

What GAO Found

The "Trust Fund Exhaustion" scenario underscores the need to take action sooner rather than later to address Social Security's financing shortfall. In so doing, the scenario illustrates trade-offs between sustainable solvency and benefit adequacy and equity.

By definition this scenario would achieve sustainable solvency because after trust fund exhaustion, benefit payments would be adjusted each year to equal annual tax income. Before exhaustion, the scenario would have the same unified fiscal results as paying currently scheduled benefits with no policy changes. After exhaustion, fiscal results would be increasingly similar to funding currently scheduled benefits with a tax increase (tax increase benchmark) and a benefit reduction benchmark that incorporates gradual and progressive reductions.

Benefits would differ sharply over time. Before trust fund exhaustion, currently scheduled benefits would be paid in full. After, benefits for all would be reduced across the board by 27 percent (to 73 percent of currently scheduled levels). Additional reductions would need to be taken in successive years such that at the end of the 75-year projection period, benefits would be reduced by 33 percent (to 67 percent of currently scheduled levels).

The Trust Fund Exhaustion scenario raises significant intergenerational equity issues. Specifically, a much greater burden would be placed on younger generations. Those born in 1955 would see no benefit reductions until age 83, while those born in 1985 would experience reduced benefits immediately upon retirement and benefits lower than under either GAO's benefit reduction benchmark or tax increase benchmark in all years of retirement. Consequently, lifetime benefits would be reduced more for younger generations. Benefits would be adjusted proportionately for all recipients, increasing the likelihood of hardship for lower-income retirees and the disabled.

Assessing the Social Security Administration's (SSA) administrative challenges under this scenario is difficult given a lack of historical precedent and legislative clarity on how SSA would proceed. A focus on cash management would be needed to calculate and implement the needed ongoing benefit adjustments.

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Abbreviations

GDP	gross domestic product
GEMINI	Genuine Microsimulation of Social Security and Accounts
MINT3	Modeling Income in the Near Term
OASDI	Old-Age and Survivors Insurance and Disability Insurance
PENSIM	Pension Simulator
PSG	Policy Simulation Group
SSA	Social Security Administration
SSASIM	Social Security and Accounts Simulator

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United States General Accounting Office
Washington, DC 20548

July 29, 2003

The Honorable Larry E. Craig
Chairman
Special Committee on Aging
United States Senate

The Honorable Charles Grassley
Chairman
Committee on Finance
United States Senate

This report responds to your request that we apply our criteria for assessing Social Security reform proposals to a “Trust Fund Exhaustion” scenario. As requested, this analysis assumes that once the combined Old-Age and Survivors Insurance and Disability Insurance (OASDI) Trust Funds are exhausted, monthly benefit checks will be reduced in proportion to the annual shortfall, effectively reducing everyone’s benefits across-the-board.¹

As agreed with your offices, our report is based on the analytic framework we have previously used to evaluate Social Security reform proposals.² This framework consists of three basic criteria:

- The extent to which the proposal achieves sustainable solvency and how it would affect the U.S. economy and the federal budget.
- The balance struck between the twin goals of income adequacy (level and certainty of benefits) and individual equity (rates of return on individual contributions).

¹As presented in this report, the Trust Fund Exhaustion scenario illustrates potential outcomes, assuming that (a) the exhaustion of the combined OASDI Trust Funds in 2038 under the intermediate assumptions of the 2001 OASDI Trustees Report, (b) future program income and costs follow projections made by the Office of Chief Actuary at the Social Security Administration, and (c) only payroll taxes and taxes on benefits flow into the trust fund. The scenario is intended as an analytic tool, not a legal determination.

²See U.S. General Accounting Office, *Social Security: Evaluating Reform Proposals*, [GAO/AIMD/HEHS-00-29](#) (Washington, D.C.: Nov. 4, 1999) and *Social Security Reform: Information on the Archer-Shaw Proposal*, [GAO/AIMD/HEHS-00-56](#) (Washington, D.C.: Jan. 18, 2000).

-
- How readily changes could be implemented, administered, and explained to the public.

As in our evaluations of reform proposals, our assessment of the Trust Fund Exhaustion scenario uses a set of detailed questions that help describe potential effects of reform models on important policy and operational aspects of public concern. These questions are displayed in the report.

It is important to keep in mind that focusing on trust fund solvency alone is not sufficient. Solvency does not tell us whether the program is sustainable—that is, whether the government will have the capacity to pay future claims or what else will have to be squeezed to pay those claims.

Although the Trustees' 2003 intermediate estimates show that the combined Social Security Trust Funds will be solvent until 2042,³ program spending will constitute a growing share of the budget and the economy well before that date. In 2008, the first baby boomers will become eligible for Social Security benefits, and in 2009 Social Security's cash surplus—the difference between program tax income and the costs of paying scheduled benefits—will begin a permanent decline. By 2018, Social Security's tax income is projected to be insufficient to pay currently scheduled benefits. Importantly, neither the decline in the cash surpluses nor the cash deficit will affect the payment of benefits. However, the shift from positive to negative cash flow will place increased pressure on the federal budget to raise the resources necessary to meet the program's ongoing costs. If you look ahead in the federal budget, Social Security together with the rapidly growing health programs (Medicare and Medicaid) will dominate the federal government's future fiscal outlook. Absent reform, the nation will ultimately have to choose between persistent, escalating federal deficits, significant tax increases, and/or dramatic budget cuts of unprecedented magnitude.

In analyzing the Trust Fund Exhaustion scenario, we used estimates provided in a memorandum dated May 8, 2003, prepared by the Social Security Administration's (SSA) Office of the Chief Actuary. Under these estimates, the cost of OASDI benefits equals OASDI income once the

³Separately, the Disability Insurance (DI) Trust Fund is projected to be exhausted in 2028 and the Old-Age and Survivors Insurance (OASI) Trust Fund in 2044.

combined trust funds are exhausted.⁴ The analyses presented in this report are based on the Trustees' best, or intermediate, estimates of the 2001 OASDI Trustees Report.⁵ Accordingly, our assessment uses the same framework as our January 15, 2003, report to you on the reform models put forward by the President's Commission to Strengthen Social Security.⁶ This report follows the format of and uses the same economic assumptions as that report.

Although any proposal's ability to achieve and sustain solvency is sensitive to economic and budgetary assumptions, using a common framework can facilitate comparisons of alternative reform proposals. Our analysis of the Trust Fund Exhaustion scenario uses the same three benchmarks as did our January report:⁷

- The "benefit reduction benchmark" assumes a gradual reduction in the currently scheduled Social Security defined benefit beginning with those newly eligible for retirement in 2005. Current tax rates are maintained.
- The "tax increase benchmark" assumes an increase in the OASDI payroll tax beginning in 2002 sufficient to achieve an actuarial balance over the 75-year period. Currently scheduled benefits are maintained.
- The "baseline extended" benchmark is a fiscal policy path developed in our earlier long-term model work that assumes payment in full of

⁴Income is defined as income from scheduled payroll-tax contributions and a portion of the income from taxation of scheduled benefits. The latter was adjusted to reflect the lower expected revenues from benefit taxation.

⁵Under the 2001 Trustees' intermediate estimates, the combined OASDI Trust Funds are projected to reach exhaustion in 2038. Under the 2003 Trustees' intermediate estimates, the projected exhaustion date is 2042.

⁶See U.S. General Accounting Office, *Social Security Reform: Analysis of Reform Models Developed by the President's Commission to Strengthen Social Security*, [GAO-03-310](#) (Washington, D.C.: Jan. 15, 2003).

⁷From the perspective of analyzing benefit adequacy, the tax increase and baseline extended benchmarks are identical because both assume payment in full of scheduled Social Security benefits over the 75-year simulation period. Our benchmarks are solvent for the 75-year projection period commonly used by SSA's Office of the Chief Actuary, but they do not achieve sustainable solvency. Both the benefit reduction and tax increase benchmarks are explicitly fully funded, and we worked closely with SSA's Office of the Chief Actuary in its design.

currently scheduled Social Security benefits throughout the simulation period and no other changes in current spending or tax policies.⁸

As in other work assessing Social Security reform proposals, we used our long-term economic model in assessing the Trust Fund Exhaustion scenario against the first criterion, that of financing sustainable solvency.⁹ Our sustainable solvency standard encompasses several different ways of looking at the Social Security program's financing needs.

While 75-year actuarial balance is generally used in evaluating the long-term financial outlook of the Social Security program and reform proposals, it is not sufficient in gauging the program's solvency after the 75th year. For example, under the Trustees' intermediate assumptions, the 75-year actuarial period changes each year, and a year with a surplus is replaced by a new 75th year that has a significant deficit. As a result, changes made to restore trust fund solvency only for the 75-year period can result in future actuarial imbalances almost immediately. Reform plans that lead to sustainable solvency would be those that consider the broader issues of fiscal sustainability and affordability over the long term.¹⁰ In analyzing reform plans, the key fiscal and economic point is the ability of the government and society to afford the commitments when they come due. Our analysis addresses this key point by looking at the level and trends over 75 years in deficits, cash needs, and gross domestic product (GDP) consumed by the program.

To examine how the Trust Fund Exhaustion scenario balances adequacy and equity concerns, we used the Genuine Microsimulation of Social Security and Accounts (GEMINI) model, a dynamic microsimulation model for analyzing the lifetime implications of Social Security policies for

⁸Implicitly, therefore, after exhaustion benefits are paid in part by increased borrowing from the public.

⁹For this analysis, consistent with SSA's scoring of the Commission reform models, our long-term economic model incorporates the 2001 Trustees' best, or intermediate, assumptions.

¹⁰The Trustees have used the term "sustainable solvency" to mean maintaining a trust fund balance that is positive and either level or increasing as a percent of the annual cost of the program at the end of the 75-year period. GAO's definition of sustainable solvency seeks to gain a more complete perspective of a proposal's likely effects on the program, the federal budget, and the economy.

a large sample of people¹¹ born in the same year. GEMINI can simulate different reform features for their effects on the level and distribution of benefits. To assess benefit adequacy over time, we display median monthly benefit levels for those born in 1955, 1970, and 1985 (“birth cohorts”) at different ages as well as their median lifetime benefits.

In analyzing reform proposals, we have stated that the use of our criteria to evaluate approaches to Social Security reform highlights the trade-offs that exist between efforts to achieve solvency for the combined OASDI Trust Funds and efforts to maintain adequate retirement income for current and future beneficiaries. For example, in our January report, we observed that the Commission reform models illustrate some of the options and trade-offs that will need to be considered as the nation debates how to reform Social Security. The Commission’s proposals also illustrated the difficulty reform proposals face generally in balancing adequacy (level and certainty of benefits) and equity (rates of return on individual contributions) considerations.

The Trust Fund Exhaustion scenario illustrates the trade-offs between sustainable solvency and benefit adequacy and equity in a different way. By definition, this scenario would achieve sustainable solvency because once the combined trust funds have run out, benefit payments would be adjusted (i.e., reduced) each year to equal annual tax income. Under this scenario, shares of the federal budget and the economy devoted to Social Security would be lower compared to currently scheduled benefits. From a fiscal perspective, before exhaustion, the scenario would have the same unified fiscal results as paying currently scheduled benefits with no policy changes. Before 2038, the Trust Fund Exhaustion scenario would reduce unified surpluses and increase unified deficits compared to the tax increase benchmark by the same amounts as the baseline extended benchmark. Subsequently, the Trust Fund Exhaustion scenario would result in unified fiscal results increasingly similar to both the tax increase benchmark and the benefit reduction scenario over the 75-year period. Before 2038, the Trust Fund Exhaustion scenario would require the same amounts of cash as the tax increase or baseline extended benchmarks;

¹¹The GEMINI cohorts consist of simulated samples of 100,000 individuals, sometimes called synthetic samples. These samples were validated against data from the Social Security Administration’s Annual Statistical Supplement, the Survey of Income and Program Participation, the Current Population Survey, Modeling Income in the Near Term, and the Panel Survey of Income Dynamics.

subsequently, the Trust Fund Exhaustion scenario would require less cash each year than any of the three benchmarks.

Under the Trust Fund Exhaustion scenario, the effect on benefits would differ sharply before and after exhaustion took place. Before exhaustion, benefits would be the same as those currently scheduled, reflected in both the tax increase and baseline extended benchmarks. Once the combined trust funds run out, benefits for all would be reduced across the board and remain below currently scheduled levels. Accordingly, after trust fund exhaustion all those receiving benefits would experience a sharp drop in benefits compared to currently scheduled levels; under the Trustees' 2001 intermediate estimates, this drop is estimated at 27 percent (or 73 percent of currently scheduled levels) in 2039.¹² Small further reductions would need to be taken in successive years such that by 2076 benefits would be one-third below currently scheduled benefits (i.e., to 67 percent of currently scheduled levels).

The Trust Fund Exhaustion scenario raises significant intergenerational issues. Specifically, due to the timing of the reductions under the Trust Fund Exhaustion scenario, younger generations would bear much greater benefit reductions. Those born in 1955 would see no benefit reductions until they reached age 83,¹³ while those born in 1985 would receive lower benefits than under either GAO's benefit reduction or tax increase benchmarks in all years of retirement. Consequently, lifetime benefits would be reduced more for younger generations. Under the Trust Fund Exhaustion scenario that we used, benefits would be adjusted proportionately for all recipients, increasing the likelihood of hardship for lower-income retirees and the disabled, especially those who rely on Social Security as their primary or sole source of retirement income.

The nature and scope of SSA's administrative challenges under the Trust Fund Exhaustion scenario are difficult to describe or assess given a lack of historical precedent and legislative clarity on how SSA would proceed. At a minimum, a focus on cash management would be needed for SSA to

¹²In 2038, the year the trust fund is exhausted, the benefit reduction would be about 7 percent because trust fund assets would be available for part of the year to pay benefits. In 2039, the first full year after the trust fund is exhausted, benefits would fall sharply, to about 27 percent below currently scheduled levels. Under the Trustees 2003 intermediate estimates, the overall drop is approximately the same.

¹³Assuming individuals are born on January 1st.

calculate and implement the ongoing benefit adjustments required under the scenario.

Concluding Observations

The use of our criteria to evaluate approaches to Social Security reform highlights the trade-offs that exist between efforts to achieve sustainable solvency and to maintain adequate retirement income for current and future beneficiaries. These trade-offs can be described as differences in the nature and extent of the risks for individuals and the nation as a whole.

At the same time, the defined benefit under the current Social Security system is also uncertain. The primary risk is that a funding gap exists between currently scheduled and funded benefits which, although it will not occur for a number of years, is significant and will grow over time. Other risks stem from uncertainty in, for example, future levels of productivity growth, real wage growth, and demographics. Congress has revised Social Security many times in the past, and future Congresses could decide to revise benefits in ways that leave those affected little time to adjust. As Congress deliberates approaches to Social Security, the national debate also needs to include discussion of the various options for reform and the timing in which it should occur.

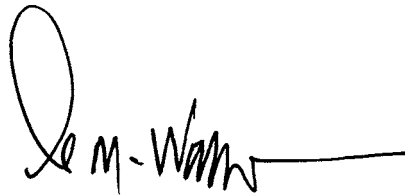
Early action to change Social Security would yield the highest fiscal dividends for the federal budget and would provide a longer period for prospective beneficiaries to make adjustments in their own planning. Waiting to build economic resources and reform future claims entails risks. First, we lose an important window where today's relatively large workforce can increase saving and enhance productivity, two elements critical to economic growth. We also lose the opportunity to reduce the burden of interest payments, thereby creating a legacy of higher debt as well as elderly entitlement spending for the relatively smaller workforce of the future. Most critically, we risk losing the opportunity to phase in changes gradually so that all can make the adjustments needed in private and public plans to accommodate this historic shift. Unfortunately, the window of opportunity to address the entitlement challenge is narrowing. As the baby boom generation retires and the numbers of those entitled to these retirement benefits grow, the difficulties of reform will be compounded. Accordingly, it remains more important than ever to deal with these issues over the next several years.

Agency Comments and Our Evaluation

We provided a draft of this report to SSA. SSA provided informal technical comments, which we have incorporated where appropriate.

We are sending copies of this report to Senator John Breaux, Ranking Minority Member, Senate Special Committee on Aging; Senator Max S. Baucus, Ranking Minority Member, Senate Committee on Finance; the Honorable William M. Thomas, Chairman, and the Honorable Charles B. Rangel, Ranking Minority Member, House Committee on Ways and Means; the Honorable E. Clay Shaw, Chairman, and the Honorable Bob Matsui, Ranking Minority Member, Subcommittee on Social Security, House Committee on Ways and Means; and the Honorable Jo Ann B. Barnhart, Commissioner, Social Security Administration. We will also make copies available to others on request. In addition, the report will be available at no charge on GAO's Web site at <http://www.gao.gov>.

If you or your offices have any questions about this report, please contact Barbara D. Bovbjerg, Director, Education, Workforce, and Income Security Issues, on (202) 512-7215, or Susan Irving, Director, Strategic Issues, on (202) 512-9142.

A handwritten signature in black ink, appearing to read "D. M. Walker", followed by a horizontal line.

David M. Walker
Comptroller General
of the United States

Appendix I: Briefing Slides



Analysis of a Trust Fund Exhaustion Scenario

July 2003



Objectives

- Evaluation of a scenario in which no changes are made to Social Security before the combined Old-Age and Survivors Insurance and Disability Insurance (OASDI) Trust Funds reach exhaustion.
- This evaluation uses the three basic criteria GAO has developed that provide policymakers with a framework for assessing proposed changes to Social Security:
 - Financing Sustainable Solvency.
 - Enhancing Adequacy and Equity in the Benefits Structure.
 - Implementing and Administering Reforms.



Methodology

- **Financing Sustainable Solvency**

- GAO's long-term economic model was used to help assess the potential fiscal and economic impacts of changes to Social Security.
- Estimates of scenario costs and income are those made by the Office of the Chief Actuary, Social Security Administration (SSA), under the Trustees' 2001 intermediate assumptions.

- **Balancing Adequacy and Equity**

- The GEMINI model, a dynamic microsimulation model,¹ was used to analyze the 1955, 1970, and 1985 birth cohorts to enable comparison of results over time as reform models are fully implemented.

- **Implementing and Administering Reforms**

- Qualitative analysis based on GAO's issued and ongoing body of work on Social Security reform was used.

¹ GEMINI is useful for analyzing the lifetime implications of Social Security policies for a large sample of people born in the same year.



Benchmarks

GAO's analysis uses three benchmarks:

- Benefit reduction maintains current payroll tax rates and assumes a gradual reduction in Social Security benefits beginning with those reaching age 62 in 2005 and continuing for the next 30 years. In each of those years, this benchmark applies equal percentage point reductions to all three Primary Insurance Amount (PIA) formula factors. Relative to a proportional reduction, this benchmark is progressive in that it reduces benefits less for lower earners.
- Tax increase¹ assumes that the combined employer-employee payroll tax rate is increased by 0.34 percent for Disability Insurance (DI) and 1.56 percent for Old-Age and Survivor Insurance (OASI) beginning in 2002 in order to pay scheduled benefits.
- Baseline extended is a fiscal policy path that assumes payment in full of all scheduled Social Security benefits throughout the 75-year period and no other changes in current policies. In this analysis, it uses the 2001 Trustees intermediate economic assumptions, consistent with SSA scoring of reform models, implicitly financing trust fund shortfalls with debt held by the public.

¹The benefit reduction and tax increase benchmarks were developed by GAO with technical input from SSA's Office of the Chief Actuary. Both use the 2001 Trustees intermediate economic assumptions and reflect cash outlays for benefits. Both restore 75-year actuarial balance to Social Security but are not solvent beyond this period. For more detailed information on the benefit reduction and tax increase benchmarks see appendix III of *Social Security: Program's Role in Helping Ensure Income Adequacy*. GAO-02-62. Washington, D.C.: November 30, 2001.



Benchmarks (continued)

- All three benchmarks are used in analyzing sustainable solvency. From the perspective of sustainable solvency, the baseline extended differs from the tax increase benchmark. The tax increase benchmark assumes payroll tax financing of all scheduled benefits whereas the baseline extended benchmark assumes all scheduled benefits will be paid but does not specify any new financing--implicitly benefits are financed by increasing debt held by the public.
 - There is no difference between the tax increase and baseline extended benchmarks in analyzing benefit levels, since only the financing of benefits differs, not the actual benefit levels. Therefore only the benefit reduction and tax increase benchmarks are used in analyzing benefit adequacy.
 - Benchmarks are to be viewed as illustrative, polar cases or bounds for changes within the current system. Other benchmarks could be devised with different tax and/or benefit adjustments that would perform the same function.
-



Trust Fund Exhaustion Scenario

- Under “Trust Fund Exhaustion,” no changes would be made to program financing. Current tax rates would be maintained.
- Currently scheduled benefits would be paid in full until the year in which the combined OASDI Trust Funds are exhausted.¹ In that year, benefits are assumed to be reduced such that total benefits equal the remaining trust fund assets plus program income from present-law taxes.² Thereafter, benefits would be reduced in proportion to the annual Social Security shortfall, effectively reducing benefits for everyone.³ (See fig. 1.)

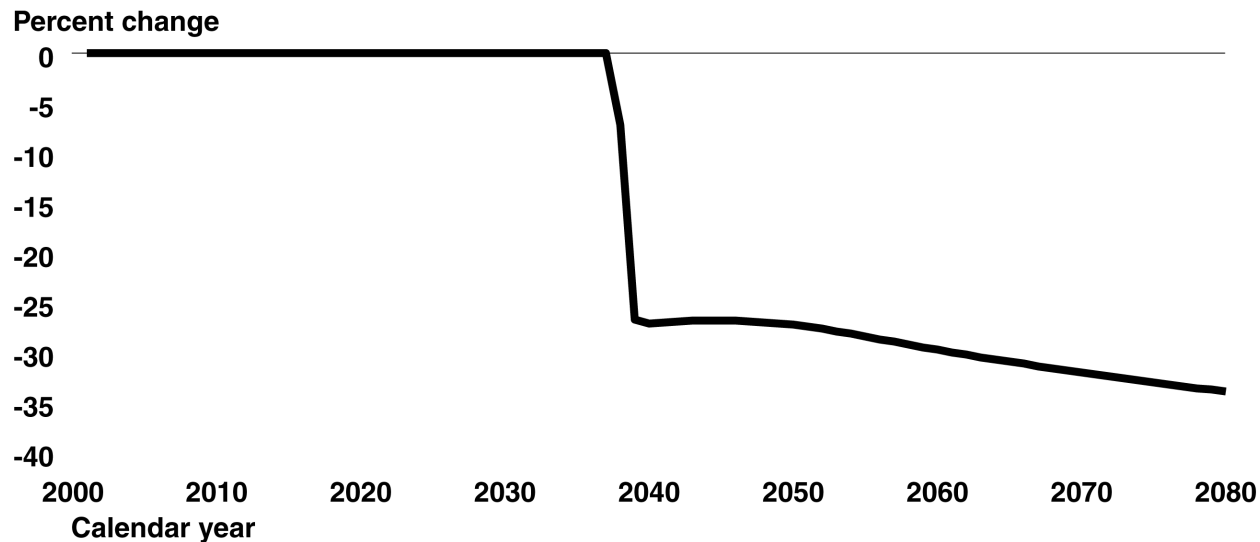
¹ The DI Trust Fund is projected to reach exhaustion before the OASI Trust Fund. Treating them as one combined fund assumes assets will be transferred as needed from OASI to DI such that both funds reach exhaustion at the same time.

² Annual revenue from present-law taxes includes income from scheduled payroll-tax contributions and income from taxation of scheduled benefits. The latter was adjusted to reflect the lower expected revenues from benefit taxation.

³ This definition of a Trust Fund Exhaustion scenario represents an analytic convenience and not a legal determination as to how benefits would fare in the event the combined OASDI Trust Funds were exhausted.



Trust Fund Exhaustion Scenario (continued)

Figure 1: Trust Fund Exhaustion Scenario**Change in Currently Scheduled Benefits under Trust Fund Exhaustion Scenario - 2001 Trustees Report**

Source: GAO analysis of data from the Office of the Chief Actuary, Social Security Administration.



Financing Sustainable Solvency

This criterion evaluates the extent to which the proposal achieves sustainable solvency, including how the proposal would affect the economy and the federal budget.

To what extent does the proposal:

- Reduce future budgetary pressures?
 - Reduce debt held by the public?
 - Reduce the cost of the Social Security system as a percentage of GDP?
 - Reduce the percentage of federal revenues consumed by the Social Security system?
 - Increase national saving?
 - Restore 75-year actuarial balance and create a stable system?
 - Raise payroll taxes, draw on general revenues, and/or use Social Security trust fund surpluses to finance changes?
 - Create contingent liabilities?
 - Include “safety valves” to control future program growth?
-



Figure 2

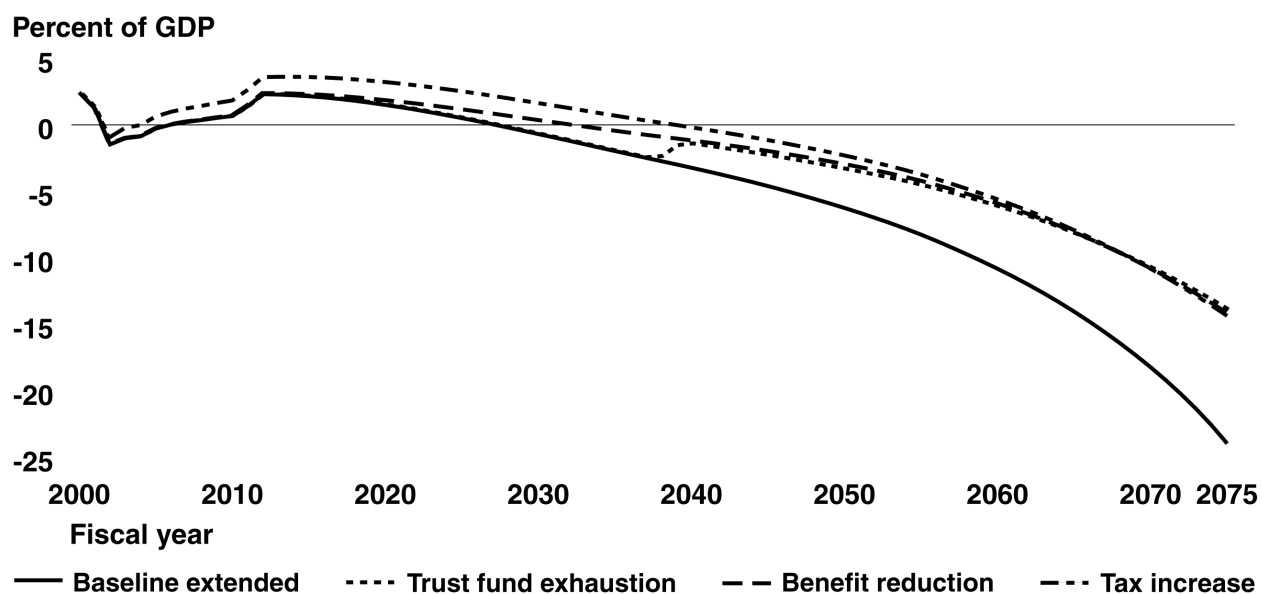
- The fiscal path under the Trust Fund Exhaustion scenario is the same as baseline extended through 2037; shortly thereafter unified deficits as a share of GDP are significantly lower under the Trust Fund Exhaustion scenario.
- Under the Trust Fund Exhaustion scenario, beginning about 2020 unified surpluses are considerably smaller and deficits considerably larger than under the benefit reduction benchmark until the combined OASDI Trust Funds are exhausted. From about 2040 through the end of the simulation period, the fiscal outlook under Trust Fund Exhaustion is quite similar to the fiscal outlook under the benefit reduction benchmark.
- Compared to the tax increase benchmark, unified surpluses are much smaller and deficits are much larger under the Trust Fund Exhaustion scenario through 2037, thereafter, the difference between the fiscal paths declines until the two are virtually indistinguishable after 2065 through the end of the simulation period.

Note: Analysis based on estimates from the Office of the Chief Actuary, SSA, under the Trustees 2001 intermediate assumptions and CBO's August 2002 baseline assumptions, including the scheduled expiration (sunset) of the tax reductions in the Economic Growth and Tax Relief Reconciliation Act of 2001.



Figure 2: Trust Fund Exhaustion Scenario

Unified Surpluses and Deficits as a Share of GDP



Source: GAO analysis.

Note: Analysis based on estimates from the Office of the Chief Actuary, SSA, under the Trustees 2001 intermediate assumptions and CBO's August 2002 baseline assumptions, including the scheduled expiration (sunset) of the tax reductions in the Economic Growth and Tax Relief Reconciliation Act of 2001.



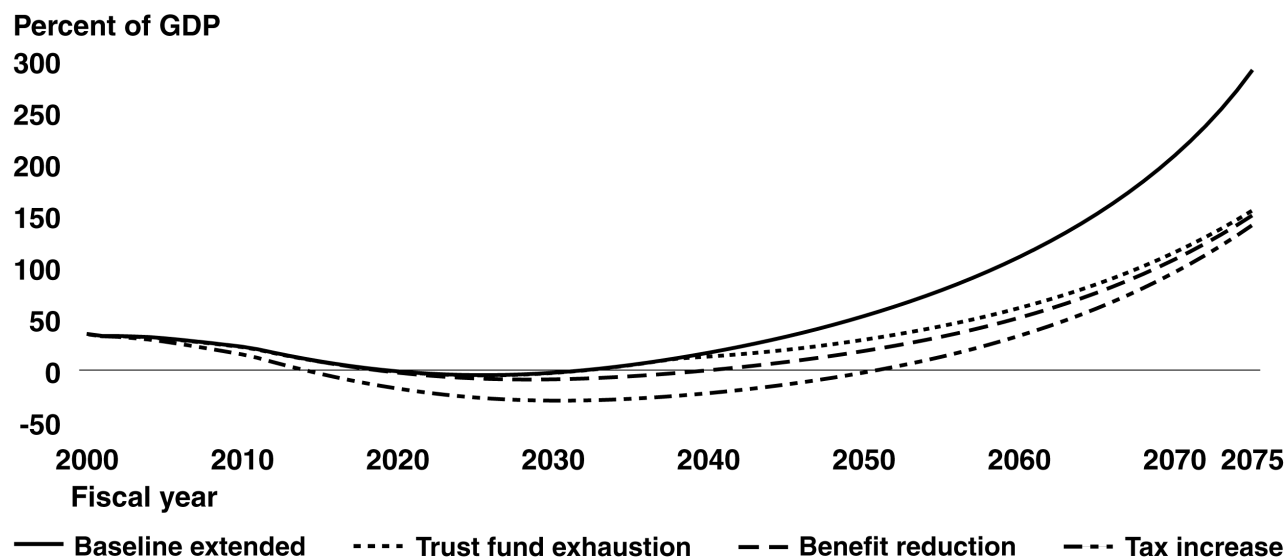
Figure 3

- Debt held by the public under the Trust Fund Exhaustion scenario is the same as baseline extended through 2037, soon thereafter debt as a share of GDP is significantly lower under the Trust Fund Exhaustion scenario, and the gap increases over time.
- Under the Trust Fund Exhaustion scenario, debt held by the public as a share of GDP is higher than under the benefit reduction benchmark throughout the simulation period.
- Compared to the tax increase benchmark, debt held by the public as a share of GDP is significantly higher under the Trust Fund Exhaustion scenario for most of the simulation period.

Note: Analysis based on estimates from the Office of the Chief Actuary, SSA, under the Trustees 2001 intermediate assumptions and CBO's August 2002 baseline assumptions, including the scheduled expiration (sunset) of the tax reductions in the Economic Growth and Tax Relief Reconciliation Act of 2001.



Figure 3: Trust Fund Exhaustion Scenario
Debt Held by the Public as a Share of GDP



Source: GAO analysis.

Note: Analysis based on estimates from the Office of the Chief Actuary, SSA, under the Trustees 2001 intermediate assumptions and CBO's August 2002 baseline assumptions, including the scheduled expiration (sunset) of the tax reductions in the Economic Growth and Tax Relief Reconciliation Act of 2001.



Figure 4

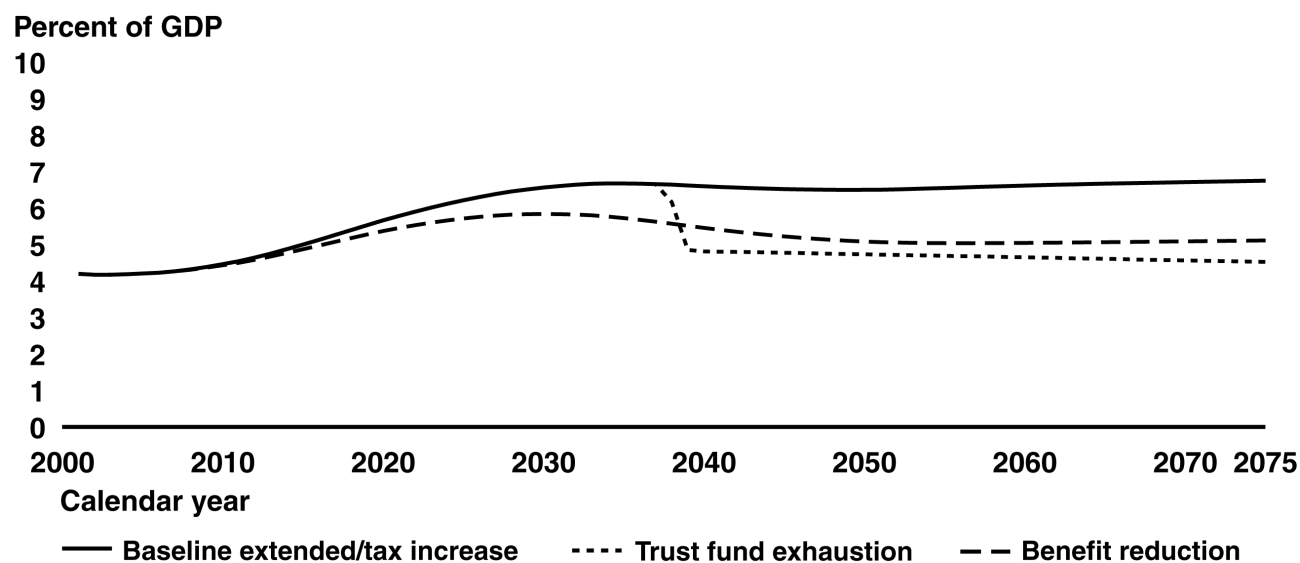
- The government's cash requirement under the Trust Fund Exhaustion scenario is the same as both the baseline extended and tax increase benchmarks through 2037. After the combined OASDI Trust Funds are exhausted, the government's cash requirement falls significantly compared to the baseline extended and tax increase benchmarks and remains relatively constant as a share of GDP through the end of the simulation period.
- Compared to the benefit reduction benchmark, the government's cash requirement as a share of GDP is lower beginning in 2039 through the end of the simulation period.

Note: Analysis based on estimates from the Office of the Chief Actuary, SSA, under the Trustees 2001 intermediate assumptions and CBO's August 2002 baseline assumptions, including the scheduled expiration (sunset) of the tax reductions in the Economic Growth and Tax Relief Reconciliation Act of 2001.



Figure 4: Trust Fund Exhaustion Scenario

Government Cash Requirements



Source: GAO analysis of data from the Office of the Chief Actuary, SSA.

Note: All estimates are based on the Trustees' 2001 intermediate assumptions and reflect cash outlays for benefits. Benefit amounts shown for the baseline extended and tax increase benchmarks are scheduled benefits as estimated by the actuaries.



Under the Trust Fund Exhaustion scenario:

- National saving would increase on a first-order basis due to the improved fiscal position of the government resulting from the reduced benefit payments beginning in 2038.¹
- 75-year actuarial balance would result as benefits are reduced to match program income. The system is stable at the reduced benefit level.
- No changes are assumed in program financing.
- No new contingent liabilities are created.
- Program growth is limited to growth in program income.

¹Analysis limited to first order effects on saving. Effects on saving behavior in response to changes are not considered given the lack of expert consensus.



Balancing Adequacy and Equity

This criterion evaluates the balance struck between the twin goals of income adequacy (level and certainty of benefits) and individual equity (rates of return on individual contributions).

To what extent does the proposal:

- Change scheduled benefits for current and future retirees?
 - Maintain benefits for the disabled, dependents, and survivors?
 - Maintain benefits for low-income workers who are most reliant on Social Security?
 - Provide higher replacement rates for lower income earners?
 - Improve intergenerational equity?
 - Ensure that those who contribute receive benefits?
 - Expand individual choice and control over program contributions?
 - Increase returns on investment?
-



Balancing Adequacy and Equity--Methodology and Assumptions

- We evaluate the adequacy and equity criterion for the Social Security Trust Fund Exhaustion scenario in comparison with GAO benchmark through analyses of:
 - Median monthly benefits for those born in 1955, 1970, and 1985 (birth cohorts) at various ages.
 - The present value¹ of lifetime benefits for beneficiaries surviving to age 65 and beyond.
 - Distribution of monthly benefits by benefit quintile and history of disability receipt.
- All cohorts we analyzed were produced using the GEMINI model, a dynamic microsimulation model of a representative sample of 100,000 individuals.
- Model Assumptions:
 - No cohort members work past age 65.
 - Retired worker beneficiaries start collecting benefits at age 65.²

¹The current value of one or more future benefit payments discounted at an appropriate interest rate--for our analysis the Treasury rate specified by the intermediate assumptions of the 2001 OASDI Trustees' Report.

² Disability recipients, certain surviving spouses, and others may receive benefits prior to age 65.



Balancing Adequacy and Equity--Overview of Trust Fund Exhaustion Scenario

- Scenario results in a benefits “cliff”--27 percent reduction in benefits in 2039 followed by continued benefit reductions.
 - Does not exempt current retirees and those near retirement age. (Those currently retired would be affected if they were receiving benefits in 2038.)
 - Benefits are reduced in a manner that does not protect low-income and disabled workers.
- Scenario reduces lifetime benefits more for younger generations.
- For those born in the same year, the scenario reduces lifetime benefits more for retirees who survive to older ages beyond the “cliff”.



Changes in Scheduled Benefits for Current and Future Retirees

- Under the Trust Fund Exhaustion scenario, the combined OASDI Trust Funds reach exhaustion in 2038, with benefits reduced in that year and all subsequent years.
 - Benefits are reduced across the board relative to currently scheduled benefits by 7 percent in 2038, about 27 percent between 2039 and 2045, and by increasingly larger percentages in subsequent years.
- Benefits under Trust Fund Exhaustion:
 - Mirror the the tax increase benchmark before 2038 and are substantially lower afterwards.
 - Are higher than the benefit reduction benchmark before 2038 and lower afterwards.

Table 1: Timing of the Benefit “Cliff”

	Those born in 1955	Those born in 1970	Those born in 1985
Year cohort reaches age 65	2020	2035	2050
Age at which the cohort reaches the "Cliff" (2038)	83	68	53

Source: GAO analysis based on Social Security Administration Office of the Chief Actuary data.

Note: Analysis assumes cohort members are born on January 1st.



Changes in Scheduled Benefits (continued)

Figure 5

- Shows benefits in 2001 dollars for illustrative individual born in 1955, 1970, and 1985 under Trust Fund Exhaustion scenario.
- The 1955 and 1970 illustrative individuals receive currently promised benefits until ages 82 and 67, respectively, followed by a benefit “cliff” with reduced benefits thereafter.
- The 1985 illustrative individual never receives currently scheduled benefits; all benefits are received after the benefit “cliff” and benefits gradually decline with age.

Figures 6, 7, and 8

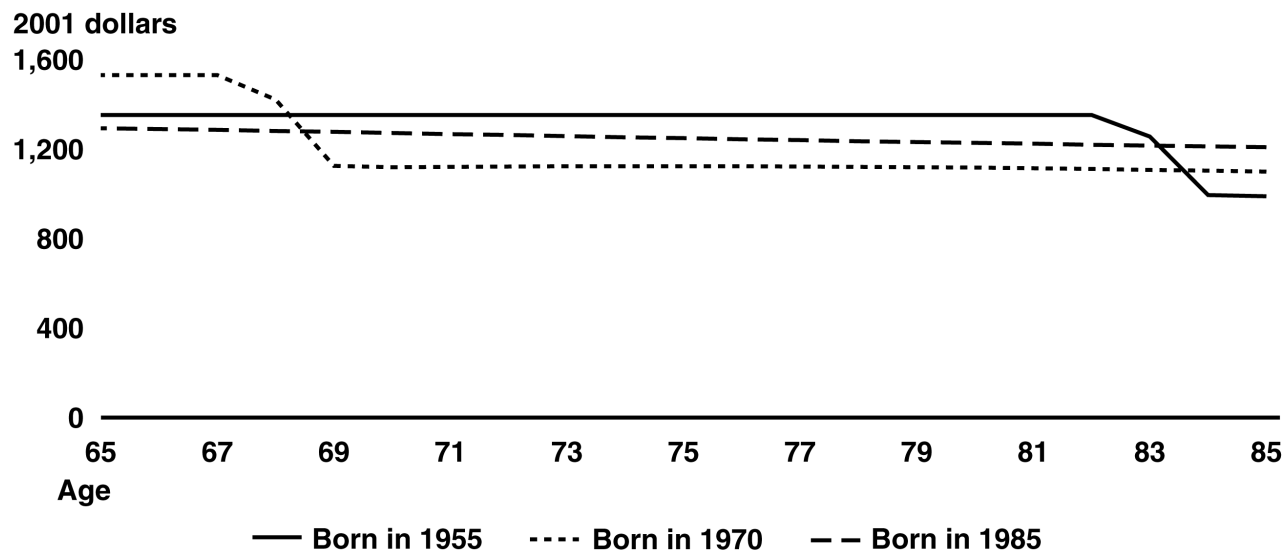
- Show median benefits for all surviving members of each birth cohort under Trust Fund Exhaustion scenario and benefit reduction and tax increase benchmarks.
- Benefits increase slightly over time under Trust Fund Exhaustion and benchmarks because some retirees change benefit status as they age.¹

¹When retirees become widowed they may receive the larger of either their own benefit or their spouses' benefit.



Figure 5: Trust Fund Exhaustion Scenario

Monthly Benefits under Trust Fund Exhaustion Scenario for an Illustrative Individual by Selected Birth Year



Source: GAO analysis using GEMINI model.

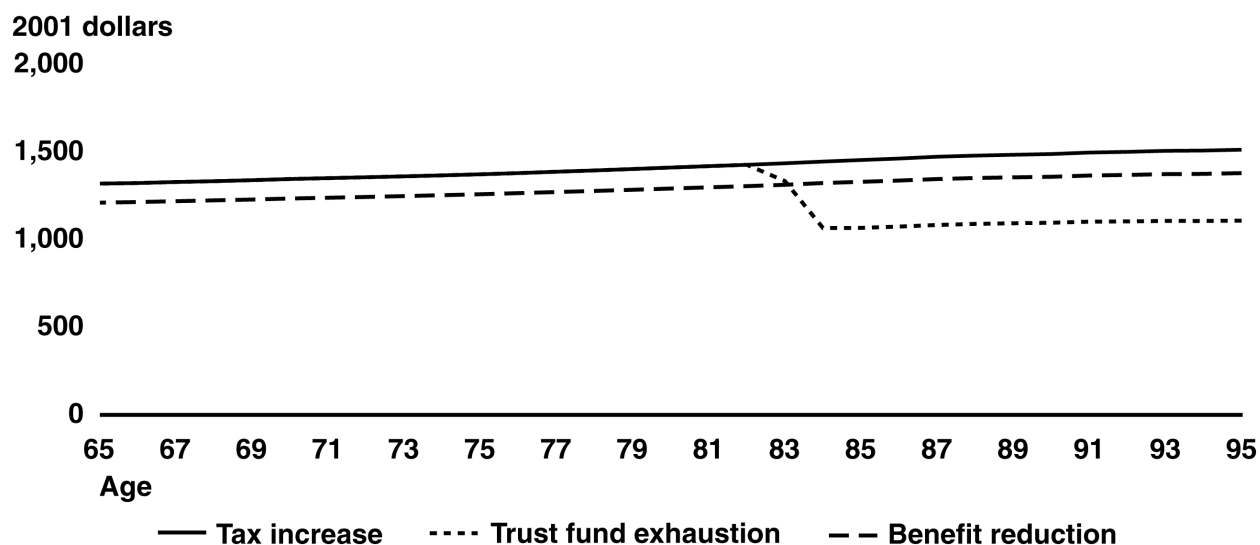
Note: Illustrative workers retire at age 65 and receive benefits equal to the median for the appropriate GEMINI cohort under the Trust Fund Exhaustion scenario. In years after 2038, real benefits are reduced according to the Trust Fund Exhaustion scenario (see fig. 1). In GEMINI, the median age of death for those living to age 65 and receiving a retired workers benefit is 84, 85, and 86 for the 1955, 1970, and 1985 cohorts, respectively.

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Changes in Scheduled Benefits (continued)

Figure 6: Trust Fund Exhaustion Scenario
Median Monthly Benefits by Age for Those Born in 1955



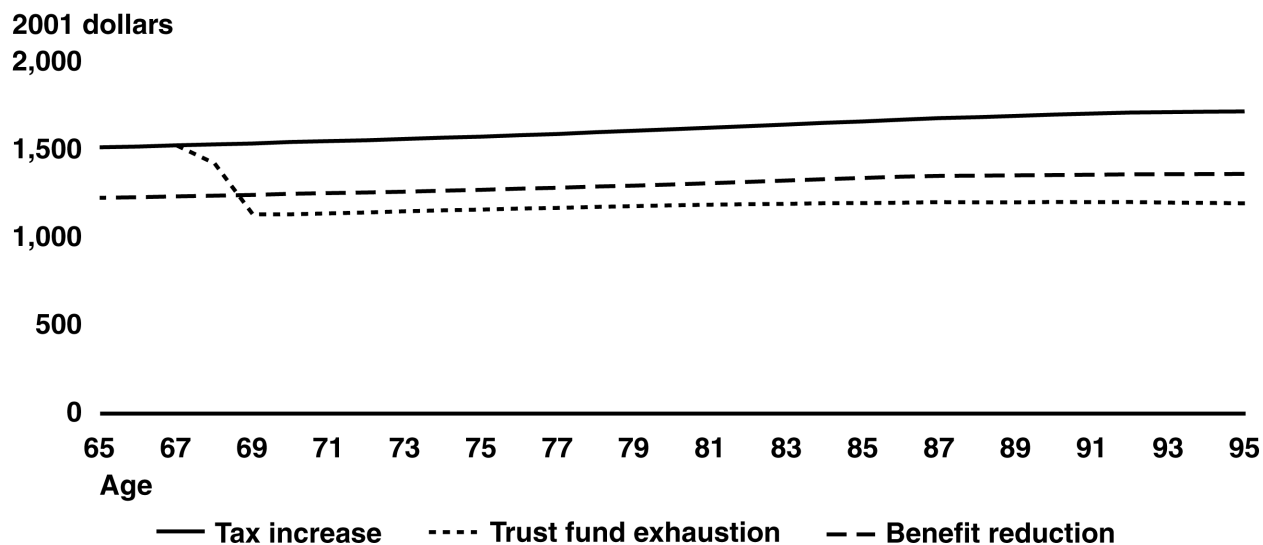
Source: GAO analysis using GEMINI model.

Note: The tax increase benchmark assumes a higher level of payroll tax (an increase of 1.9 percentage points beginning in 2002) than either the benefit reduction benchmark or the Trust Fund Exhaustion scenario.



Changes in Scheduled Benefits (continued)

Figure 7: Trust Fund Exhaustion Scenario
Median Monthly Benefits by Age for Those Born in 1970



Source: GAO analysis using GEMINI model.

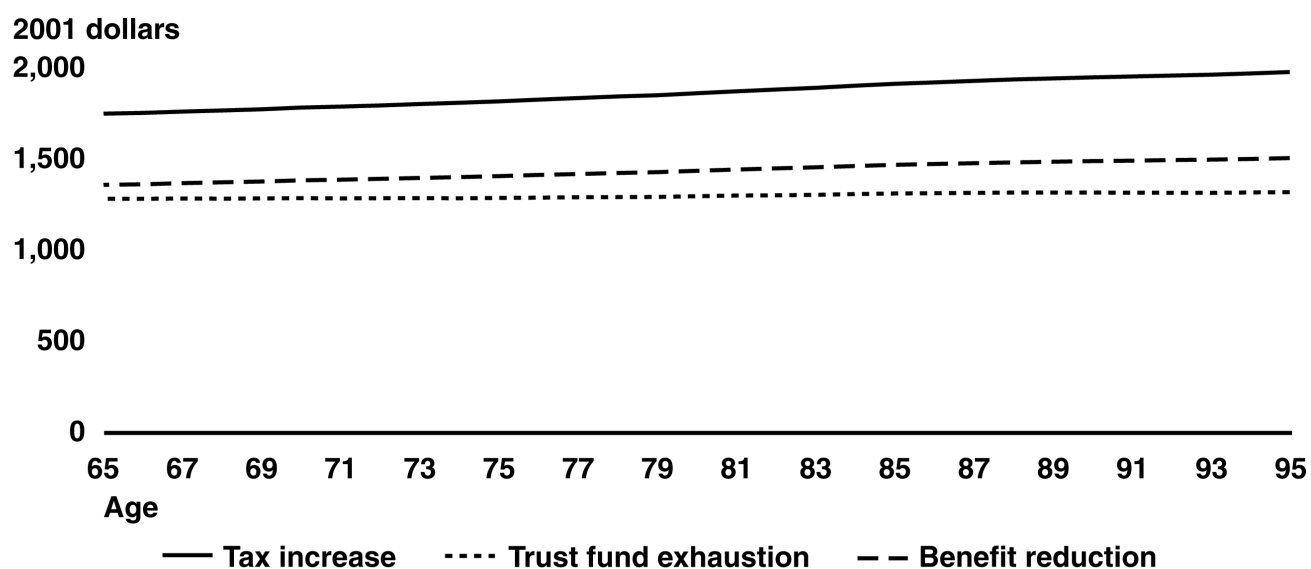
Note: The tax increase benchmark assumes a higher level of payroll tax (an increase of 1.9 percentage points beginning in 2002) than either the benefit reduction benchmark or the Trust Fund Exhaustion scenario.



Changes in Scheduled Benefits (continued)

Figure 8: Trust Fund Exhaustion Scenario

Median Monthly Benefits by Age for Those Born in 1985



Source: GAO analysis using GEMINI model.

Note: The tax increase benchmark assumes a higher level of payroll tax (an increase of 1.9 percentage points beginning in 2002) than either the benefit reduction benchmark or the Trust Fund Exhaustion scenario.

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Benefit Outcomes for Low-Income Beneficiaries

Figures 9 and 10

Trust Fund Exhaustion scenario:

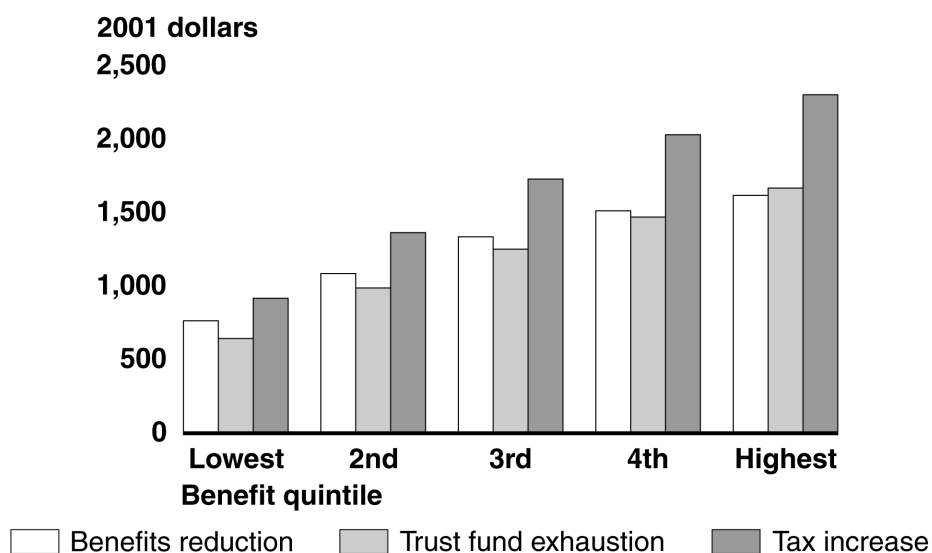
- Reduces benefits in a manner that does not protect low-income workers.
- Reduces benefits relative to the benefit reduction benchmark by more for the lower benefit quintiles
 - Benefit reduction benchmark cuts benefits in a more progressive manner.
- Reduces benefits relative to the tax increase benchmark by the same proportion for all benefit quintiles.
- Is more likely to adversely affect benefit adequacy and poverty rates than a more progressive reduction, all else equal.



Benefit Outcomes (continued)

Figure 9: Trust Fund Exhaustion Scenario

Median Real Monthly Benefits at Age 67 by Quintile for Those Born in 1985



Source: GAO analysis using GEMINI model.

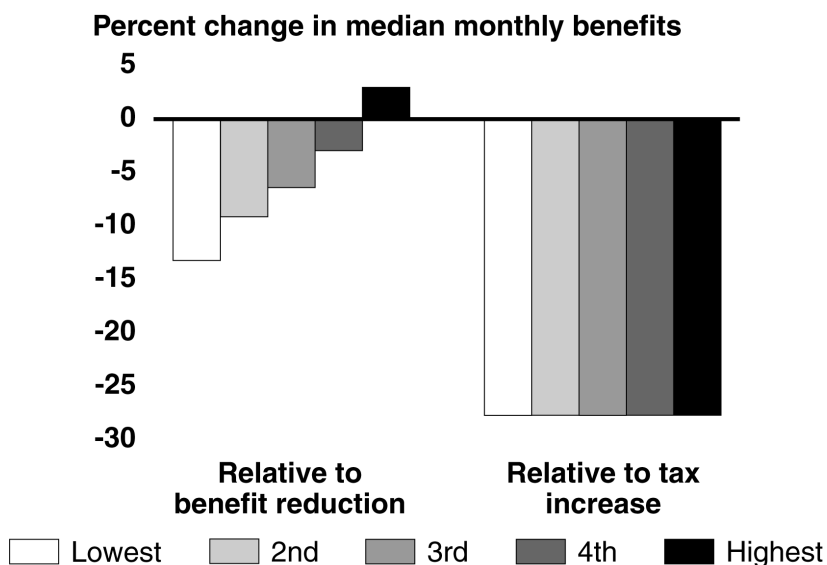
Note: Benefit quintiles are based on the distribution of benefits at age 67 under the tax increase benchmark. The tax increase benchmark assumes a higher level of payroll tax (an increase of 1.9 percentage points beginning in 2002) than either the benefit reduction benchmark or the Trust Fund Exhaustion scenario.

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Figure 10: Trust Fund Exhaustion Scenario

Percentage Change in Benefits at Age 67 under the Trust Fund Exhaustion Scenario Relative to the Tax Increase and Benefit Reduction Benchmarks by Benefit Quintile for Those Born in 1985



Source: GAO analysis using GEMINI model.

Note: Compared to the proportional reduction specified by the Trust Fund Exhaustion scenario, the benefit reduction benchmark is progressive in that it reduces benefits less for lower earners. Benefit quintiles are based on the distribution of benefits at age 67 under the tax increase benchmark. The tax increase benchmark assumes a higher level of payroll tax (an increase of 1.9 percentage points beginning in 2002) than either the benefit reduction benchmark or the Trust Fund Exhaustion scenario. Similar analysis for the 1955 and 1970 cohorts shows similar results—benefits are not reduced by smaller percentages for the lower benefit quintiles relative to either benchmark.

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Benefit Outcomes for Disabled Beneficiaries¹

Trust Fund Exhaustion scenario

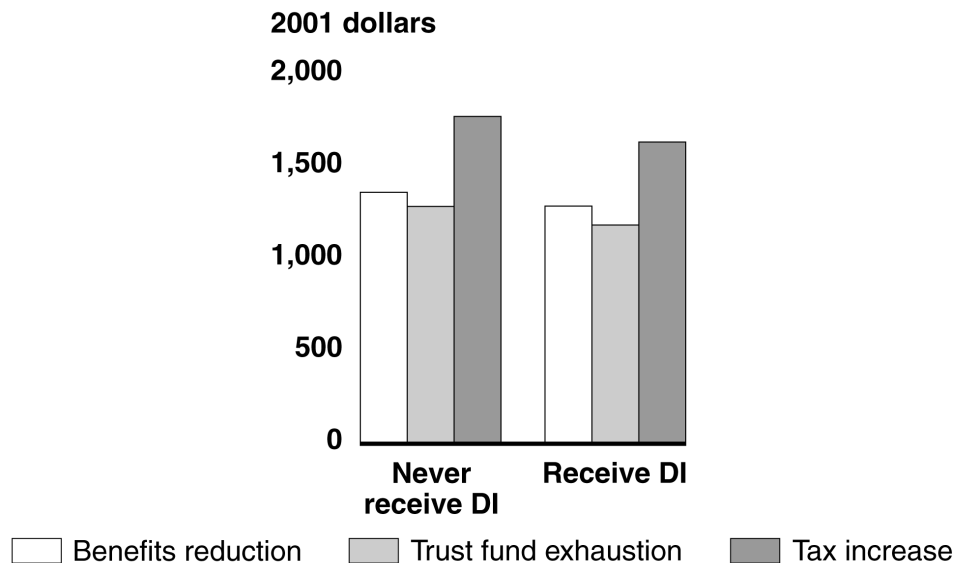
Figure 11

- Reduces benefits by the same proportion for all beneficiaries including disabled workers.

Figure 12

- Reduces benefits relative to the benefit reduction benchmark by more for those who received disability before reaching the normal retirement age.
 - Disability recipients have lower lifetime earnings.
 - Benefit reduction benchmark cuts benefits in a more progressive manner.
- Reduces benefits relative to the tax increase benchmark by the same proportion for those who received disability and those who did not.

¹ Neither the Trust Fund Exhaustion scenario nor the benchmarks contain any specific provisions relating to disabled beneficiaries. For instance differences among the Trust Fund Exhaustion scenario and the benefit reduction benchmark are due in large part to the differing treatment of low lifetime earners.

**Figure 11: Trust Fund Exhaustion Scenario****Median Real Monthly Benefits at Age 67 by History of DI Receipt for Those Born in 1985**

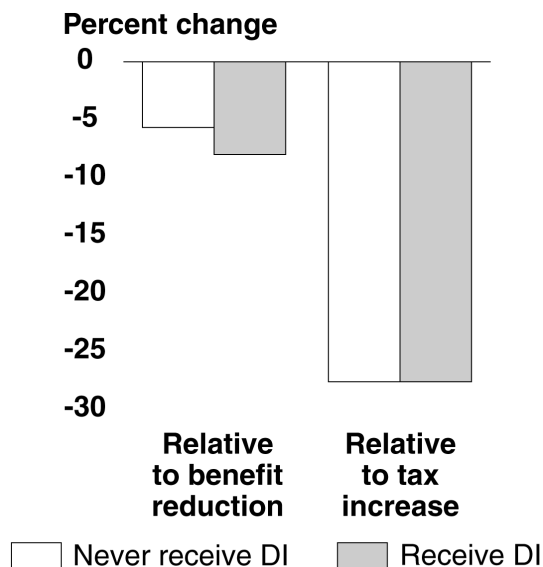
Source: GAO analysis using GEMINI model.

Note: The tax increase benchmark assumes a higher level of payroll tax (an increase of 1.9 percentage points beginning in 2002) than either the benefit reduction benchmark or the Trust Fund Exhaustion scenario.



Figure 12. Trust Fund Exhaustion Scenario

Percentage Reduction in Median Monthly Benefits under Trust Fund Exhaustion Scenario at Age 67 Relative to the Tax Increase and Benefit Reduction Benchmarks by History of DI Receipt for Those Born in 1985



Source: GAO analysis using GEMINI model.

Note: Compared to the proportional reduction specified by the Trust Fund Exhaustion scenario, the benefit reduction benchmark is progressive in that it reduces benefits less for lower earners. The tax increase benchmark assumes a higher level of payroll tax (an increase of 1.9 percentage points beginning in 2002) than either the benefit reduction benchmark or the Trust Fund Exhaustion scenario. Similar analysis for the 1955 and 1970 cohorts shows the similar results—benefits are not reduced by smaller percentages for the disabled relative to either benchmark.

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Effect on Generational Equity

Figures 13 and 14

- For those born in 1955, lifetime benefits are higher under the Trust Fund Exhaustion scenario than under the benefit reduction benchmark. However, those living to age 83 and older would experience the “cliff.”
- For those born in 1970 cohort, lifetime benefits are about the same under the Trust Fund Exhaustion scenario and the benefit reduction benchmark.¹ However, those surviving to age 69 and older would see their monthly benefits reduced well below the benefit reduction benchmark.
- Lifetime benefits for those born in 1985 are about 7 percent lower under the Trust Fund Exhaustion scenario than under the benefit reduction benchmark (see fig. 14).

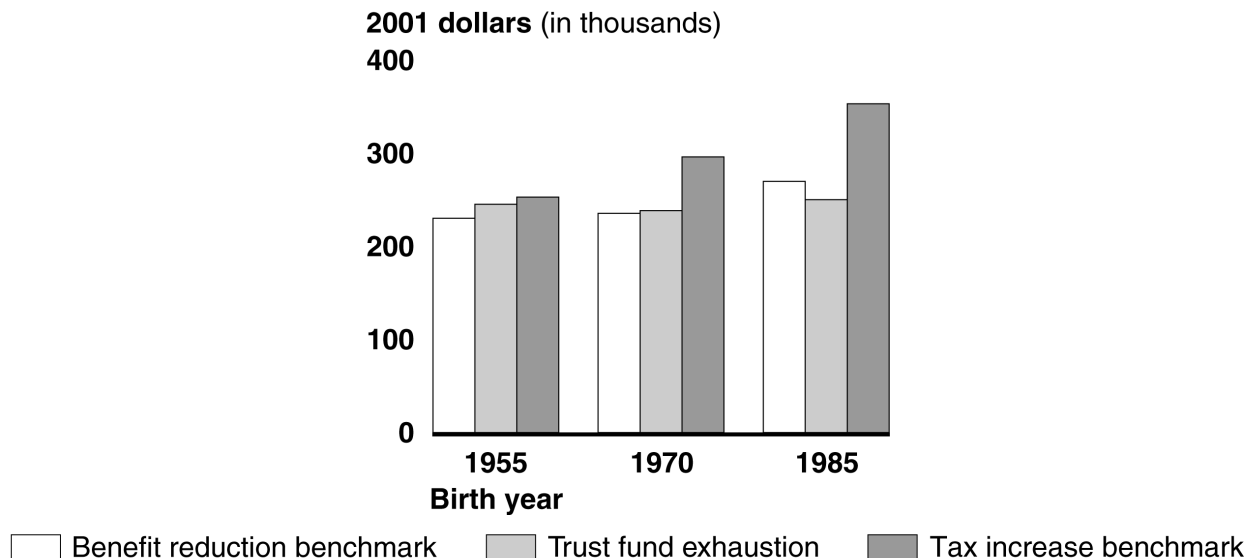
¹ The Trust Fund Exhaustion scenario yields about 1 percent greater lifetime benefits relative to the benefit reduction benchmark (see fig. 14).



Effect on Generational Equity (continued)

Figure 13: Trust Fund Exhaustion Scenario

Present Value of Lifetime Social Security Benefits by Birth Year



Source: GAO analysis using GEMINI model.

Note: Benefits are calculated for individuals that survive to ages 65 and older. Assumes that benefits continue to decline beyond 2080 at the rate of decline for the period 2071-2080. This assumption affects benefits only for those born in 1985 surviving to age 95 or older. The tax increase benchmark assumes a higher level of payroll tax (an increase of 1.9 percentage points beginning in 2002) than either the benefit reduction benchmark or the Trust Fund Exhaustion scenario. Analysis does not reflect any behavioral changes resulting from the benchmark or scenario, such as the impact of higher taxes on consumption or retirement saving under the tax increase benchmark.

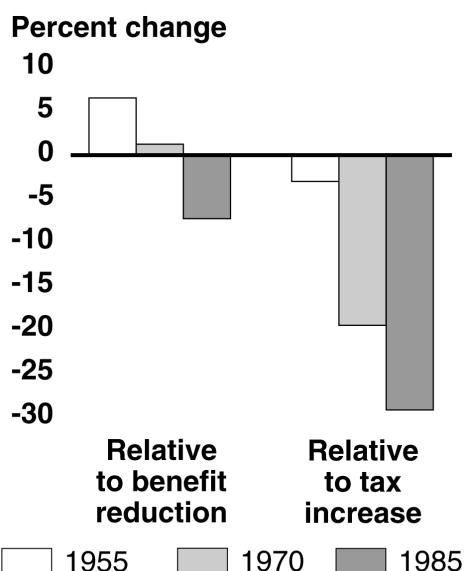
32



Effect on Generational Equity (continued)

Figure 14: Trust Fund Exhaustion Scenario

Percentage Change in Lifetime Benefits under the Trust Fund Exhaustion Scenario Relative to the Tax Increase and Benefit Reduction Benchmarks



Source: GAO analysis using GEMINI model.

Note: Compared to the proportional reduction specified by the Trust Fund Exhaustion scenario, the benefit reduction benchmark is progressive in that it reduces benefits less for lower earners. The present value of lifetime benefits are calculated in 2001 dollars for cohort members that survive to ages 65 and older. The tax increase benchmark assumes a higher level of payroll tax (an increase of 1.9 percentage points beginning in 2002) than either the benefit reduction benchmark or the Trust Fund Exhaustion scenario. Analysis does not reflect any behavioral changes resulting from the benchmark or scenario, such as the impact of higher taxes on consumption or retirement saving under the tax increase benchmark.

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Implementing and Administering Reforms

This criterion evaluates how readily such changes could be implemented, administered, and explained to the public.

To what extent does the scenario:

- Provide reasonable timing and funds for implementation and result in reasonable administrative costs?
- Allow the general public to readily understand its financing structure and increase public confidence?
- Allow the general public to readily understand the benefit structure and avoid expectation gaps?
- Limit the potential for politically motivated investing?



- Assessing the Social Security Administration’s administrative and implementation challenges posed by a Trust Fund Exhaustion scenario is complicated by a lack of historical precedent and legislative clarity on how SSA would proceed.
 - Any determination of benefit distributions after exhaustion of the combined OASDI Trust Funds would pose challenges to fundamental administrative functions of SSA.
 - At a minimum, a focus on cash management would be needed for SSA to calculate and implement the ongoing benefit adjustments required under the scenario.
 - This Trust Fund Exhaustion scenario would require an educational campaign to make public aware of “cliff” in benefits and of subsequent reductions.
 - Difficulty added to individuals’ retirement planning as benefits develop into a moving target—“cliff” may be foreseen, but cuts tend to be deeper as an individual ages.
-

Appendix II: Methodology

Fiscal Model

The model simulates the interrelationships between the budget and the economy over the long term and does not reflect their interaction during short-term business cycles. Long-term simulations provide illustrations—not precise forecasts—of the relative fiscal and economic outcomes associated with alternative policy paths. They are useful for comparing the potential outcomes of alternative policies within a common economic framework over the long term. Recognizing their inherent uncertainties, we have generally chosen conservative assumptions, such as holding interest rates and total factor productivity growth constant. Variations in these assumptions generally would not affect the relative outcomes of alternative policies.

Table 1: Fiscal Model Assumption Summary

Model Inputs	Assumptions
Social Security spending (OASDI)	2001 Social Security Trustees' intermediate projections.
Medicare spending (HI and SMI)	2001 Medicare Trustees' intermediate assumption that per enrollee Medicare spending grows with GDP per capita plus 1 percentage point.
Medicaid spending	CBO's July 2002 long-term assumption that per enrollee Medicaid spending grows with GDP per capita plus 1 percentage point.
Other mandatory spending	CBO's August 2002 baseline through 2012; thereafter increases at the rate of economic growth (i.e., remains constant as a share of GDP).
Discretionary spending	CBO's August 2002 baseline through 2012, adjusted for the 2001 Social Security Trustees' inflation assumptions; thereafter increases at the rate of economic growth.
Revenue	CBO's August 2002 baseline through 2012; thereafter remains constant at 20.5 percent of GDP (CBO's projection in 2012).
Nonfederal saving (percent of GDP): gross saving of the private sector and state and local government sector	Increases gradually over the first 10 years to 17.5 percent of GDP (the average nonfederal saving rate from 1992-2001).
Net foreign investment (percent of GDP)	Increases (or decreases) from 2002 share of GDP by one-third of any increase (or decrease) in gross national saving through 2012; thereafter increases (or decreases) from 2012 nominal dollar level by one-third of any increase (or decrease) in gross national saving.
Labor: growth in hours worked	2001 Social Security Trustees' intermediate projections.
Total factor productivity growth	Consistent with labor productivity growth in 2001 Social Security Trustees' intermediate projections.
Inflation (GDP price index and CPI)	2001 Social Security Trustees' intermediate projections.
Interest rate (average on the national debt)	CBO's August 2002 implied real average interest rate through 2011 adjusted for the 2001 Social Security Trustees' intermediate inflation assumptions; 6.3 percent thereafter.

Source: GAO.

Benefit Model

Genuine Microsimulation of Social Security and Accounts (GEMINI) is a microsimulation model developed by the Policy Simulation Group (PSG). GEMINI is linked with two other PSG models, the Social Security and Accounts Simulator (SSASIM), which has been used in numerous GAO reports, and the Pension Simulator (PENSIM), which has been developed for the Department of Labor. For our report, we used SSASIM to produce Social Security policy regimes consistent with the benefit reduction benchmark, the tax increase benchmark, and the Trust Fund Exhaustion scenario. PENSIM produced simulated samples, sometimes called synthetic samples, of lifetime histories, including earnings, educational attainment, marriage, disability, and death, for the cohorts born in 1955, 1970, and 1985. The lifetime histories were validated against data from the Survey of Income and Program Participation, the Current Population Survey, Modeling Income in the Near Term (MINT3),¹ and the Panel Study of Income Dynamics. Additionally, any projected statistics (such as life expectancy, educational attainment, employment patterns, and marital status at age 60) are, where possible, consistent with intermediate-cost projections from SSA's Office of the Chief Actuary. Because PENSIM cannot yet stochastically determine the age at which a member of the sample applies for benefits, we assumed that all retired worker beneficiaries claim benefits at age 65. GEMINI used the lifetime histories produced by PENSIM and the policy regimes produced by SSASIM to simulate Social Security benefits for retired and disabled workers and auxiliary benefits paid to spouses, widows, and children.

Additional information about GEMINI may be found in three previous GAO reports that used the model: *Retirement Income: Intergenerational Comparisons of Wealth and Future Income*, [GAO-03-429](#) (Washington, D.C.: Apr. 25, 2003); *Social Security Reform: Analysis of Reform Models Developed by the President's Commission to Strengthen Social Security*, [GAO-03-310](#) (Washington, D.C.: Jan. 15, 2003); and *Social Security: Program's Role in Helping Ensure Income Adequacy*, [GAO-02-62](#) (Washington, D.C.: Nov. 30, 2001).

The GEMINI, PENSIM, and SSASIM models are updated to reflect changes in information sources. Notable changes from recent reports include updated mortality and disability patterns to reflect new information from

¹MINT3 is a detailed microsimulation model developed jointly by the Social Security Administration, the Brookings Institution, RAND, and the Urban Institute to project the distribution of income in retirement for the 1931 to 1960 birth cohorts.

SSA's Office of the Chief Actuary. For more information on the models, see the PSG Web site at www.polsim.com.

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